

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions, and listings, of claims in the application:

Claims 1-19 (Canceled)

20. (Currently amended) A nitride based heterostructure device comprising:

- a substrate;
- a buffer layer directly on the substrate, wherein the buffer layer includes In; and
- a quaternary layer directly on the buffer layer, wherein the quaternary layer includes Ga, Al, N, and In.

21. (Previously presented) The device of claim 20, wherein the substrate comprises one of the group comprising sapphire, SiC, ZnO, a spinel substrate, Si, anodized alumina, and AlN.

22. (Previously presented) The device of claim 20, wherein the quaternary layer includes about a 20% to 30% molar fraction of Al.

23. (Previously presented) The device of claim 22, wherein the quaternary layer further includes about a 2% to 5% molar fraction of In.

24. (Currently amended) A nitride based heterostructure device comprising:

a substrate;

a buffer layer directly on the substrate, wherein the buffer layer includes In;

a first layer including GaN directly on the buffer layer;

a second layer directly on the first layer, wherein the second layer includes AlGaIn; and

a quaternary layer directly on the second layer, wherein the quaternary layer includes AlInGaIn.

25. (Previously presented) The device of claim 24, wherein the substrate includes one of the group comprising sapphire, SiC, ZnO, a spinel substrate, Si, anodized alumina, and AlN.

26. (Previously presented) The device of claim 24, wherein the quaternary layer includes about a 20% to about 30% molar fraction of Al.

27. (Previously presented) The device of claim 26, wherein the quaternary layer further includes about a 2% to about 5% molar fraction of In.

28. (Previously presented) The device of claim 24, wherein the first layer further includes In.

29. (Currently amended) A nitride based heterostructure device comprising:

a substrate;

a buffer layer directly on the substrate, wherein the buffer layer includes In;

a ternary layer directly on the buffer layer, wherein the ternary layer includes Ga, In, and N; and

a quaternary layer directly on the ternary layer, wherein the quaternary layer includes Ga, Al, In, and N.

30. (Previously presented) The device of claim 29, wherein the buffer layer includes Al and N.

31. (Previously presented) The device of claim 20, wherein the buffer layer comprises a semi-insulating layer.

32. (Previously presented) The device of claim 20, wherein the substrate comprises a substantially nonconductive substrate.

33. (New) A nitride based heterostructure device comprising:

a substrate;

a buffer layer on the substrate, wherein the buffer layer includes In; and

a quaternary layer on the buffer layer, wherein the quaternary layer includes Ga, Al, N, and In, wherein the quaternary layer includes about a 20% to 30% molar fraction of Al.

34. (New) The device of claim 33, wherein the quaternary layer further includes about a 2% to 5% molar fraction of In.

35. (New) A nitride based heterostructure device comprising:

a substrate;

a buffer layer on the substrate, wherein the buffer layer includes In;

a first layer including GaN on the buffer layer;

a second layer on the first layer, wherein the second layer includes AlGa_N; and

a quaternary layer on the second layer, wherein the quaternary layer includes AlInGa_N,

wherein the quaternary layer includes about a 20% to about 30% molar fraction of Al.

36. (New) The device of claim 35, wherein the quaternary layer further includes about a 2% to about 5% molar fraction of In.